



Promoting Learning by Inquiry Among Undergraduates in Soil Sciences: Scaffolding From Project-based Courses to Student-Staff Research Grants by the National Research Agency in Oman

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Three strategies in a soil science undergraduate programme with inquiry-based learning (IBL) principles at Sultan Qaboos University, Oman, are presented. The first strategy scaffolds courses into three phases: with direct instructional guidance, structured IBL, and finally, guided to open IBL. The second strategy involves extra-curricular activities of undergraduates, viz. conducting workshops on soils for pupils in grades 7-9 with their teachers. The third strategy promotes the teaching-research nexus through collaboration between the undergraduates and faculty within a student-supporting, government-funded programme through 1-year long research grants of up to 5,500 US\$/project. The efficiency of the strategies was evaluated by students' evaluations of courses and instructors and questionnaire-based surveys. Statistics of students' responses in teaching evaluations of IBL courses showed a significantly higher level of satisfaction compared with regular courses taught in the department and college. In surveys of other constituencies of the program, viz. the secondary schools, more than 90% of respondents "agreed" or "strongly agreed" that they had learned new information/secrets about soils. The indicators of success in the third strategy are: winning a highly competitive grant and, moreover, earning an even more competitive annual national award for the best executed research project. The two top graduates of the IBL soil programme progressed into the MSc programme with the university and national scholarships.

Key words: inquiry based learning, soil science undergraduate program, scaffold of courses, outreach activities, teaching-research nexus, evaluation of program's efficiency